Plant Document Analysis

Generated on: 2025-11-17 15:23:45

Section 1: Accepted Specifications for Evaluation of Nozzle Load Analysis

- Appendix P — "Nozzle Loads (Addition)" provides mandatory minimum external nozzle loadings by nominal nozzle size (API 650 addition). These loads are to be used for design verification of shell openings/nozzles.

- The table loadings apply at the nozzle-to-shell junction (explicit statement: "Loadings shown in the above table, apply at the nozzle to shell junction.").

- Nozzle loads for sizes greater than 24" NB are to be agreed between CONTRACTOR and CONSTRUCTION MANAGER (explicit requirement).

- CONTRACTOR responsibility: confirm acceptability of the specified external nozzle and support pad loading or advise the maximum loading acceptable for the tank design (explicit requirement).

- The Vendor Data Requirement (12.2) explicitly lists "Nozzle load Analysis" as a required submission during Manufacturing & site erection.

- 5.7.6.4 (Addition): "The minimum distance from bottom of tank to centre line of any nozzle or manway shall be as per API Standard 650 for regular nozzles – table 5.6a." (i.e., clearance/positioning requirement tied to API 650).

- 5.8.2 (Addition): "Reinforcement or bearing plates shall be added to the tank bottom under all concentrated loads such as ... support legs for floating roofs, fixed columns, etc." (requirement to provide local reinforcement under concentrated loads — relevant if nozzle loads transmit concentrated loads to bottom or shell attachments).

- Preamble: "CONTRACTOR shall provide calculations justifying the acceptability of the specified loading." (Appendix P requirement for calculations).

Section 2: Measurements Provided in Document

- Nozzle loading table (loads apply at nozzle-to-shell junction): (explicit numeric values from Appendix P)

- 2" and below: Loads considered negligible

- 3": Radial Load = 1000 N; Circumferential Moment = 200 Nm; Longitudinal Moment = 200 Nm

- 4": Radial Load = 1500 N; Circumferential Moment = 300 Nm; Longitudinal Moment = 300 Nm

- 6": Radial Load = 2500 N; Circumferential Moment = 700 Nm; Longitudinal Moment = 700 Nm

- 8": Radial Load = 4000 N; Circumferential Moment = 1500 Nm; Longitudinal Moment = 1500 Nm

- 10": Radial Load = 5000 N; Circumferential Moment = 2500 Nm; Longitudinal Moment = 2500 Nm

- 12": Radial Load = 7000 N; Circumferential Moment = 4000 Nm; Longitudinal Moment = 4000 Nm

- 14": Radial Load = 9000 N; Circumferential Moment = 6000 Nm; Longitudinal Moment = 6000 Nm

- 16": Radial Load = 11000 N; Circumferential Moment = 8000 Nm; Longitudinal Moment = 8000 Nm

- 18": Radial Load = 13000 N; Circumferential Moment = 10000 Nm; Longitudinal Moment = 10000 Nm

- 20": Radial Load = 15000 N; Circumferential Moment = 13000 Nm; Longitudinal Moment = 13000 Nm

- 24": Radial Load = 20000 N; Circumferential Moment = 18000 Nm; Longitudinal Moment = 18000 Nm

- Corrosion allowance for anchor bolts (relevant to anchorage that may interact with nozzle loads): minimum corrosion allowance = 6 mm (0.25 inch) (5.12.5 Addition).

- Minimum anchor bolt size (relevant where anchoring interacts with nozzle/support layout): M33 (Appendix B & F).

Section 3: Inputs and Additional Requirements from Client (explicitly stated in the document)

- Owner will provide basic configuration, service data, design requirements and all other applicable loads; these shall be specified on the tank data sheet (Section 5.1 / Definitions 5.3).

- Construction Manager (CONSTRUCTION MANAGER) or CONSTRUCTION MANAGER may specify nozzle loads higher than the table values where necessary to suit the piping layout (Appendix P).

- CONTRACTOR must confirm acceptability of specified external nozzle and support pad loading or advise the maximum acceptable loading for the tank design (Appendix P).

- CONTRACTOR shall provide calculations justifying acceptability of specified loading (Appendix P: "